

WHAT IS CLAIMED IS:

1. A broadcast/communication unified passive optical network system, comprising:

5 an optical line termination for time-division multiplexing received digital broadcast signals, for receiving communication signals from an electronic network, and for wavelength-division multiplexing and transmitting the digital broadcast signals and the communication signals;

a plurality of optical network units connected to the optical line termination in
10 one-to-multi connection, each of said optical network units receiving the broadcast signals and the communication signals from the optical line termination, the plurality of optical network units for time-division demultiplexing the multiplexed digital broadcast signals, and outputting a subset of the demultiplexed digital broadcast signals selected in accordance with a subscriber control signal and the communicating signals; and

15 a plurality of setup boxes connected to the plurality of optical network units in one-to-multi connection, each of the plurality of setup boxes receiving the broadcast signals and communication signals from a corresponding optical network unit, the plurality of setup boxes further configured to send subscriber control signals input by a subscriber to the corresponding optical network unit.

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2. The system according to claim 1, wherein the received digital broadcast signals is an MPEG2 multi-program transport stream.

3. The system according to claim 1, wherein the electronic network is the Internet.

4. The system according to claim 1, wherein the optical line termination comprises:

5 a first and a second format converter for format-converting the digital broadcast signals from a moving image format into a time-division multiplexing (TDM) format;

a time-division multiplexer which time-division multiplexes the format-converted digital broadcast signals;

a distributor for receiving broadcast signals from the electronic network; and

10 a wavelength-division multiplexer for wavelength-division multiplexing and transmitting the format-converted digital broadcast signals and the communication signals to the optical network units over an optical fiber.

5. The system according to claim 3, wherein the TDM format is in accordance with
15 a synchronous digital hierarchy/synchronous optical network (SDH/SONET) standard.

6. The system according to claim 4, wherein the optical line termination further comprises:

a first and a second local processor for remultiplexing the broadcast signals to the
20 format converter;

a buffer for storing signals received from the VOD server;

a distributor;

a first E/O converter for converting the format-converted digital broadcast signals provided from the time-division multiplexer; and

a second E/O converter for converting the communication signals provided from the distributor.

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7. The system according to claim 1, wherein each of the plurality of optical network units comprises:

a wavelength-division multiplexer for demultiplexing the signals received through the optical fiber;

10 a time-division multiplexer for time-division demultiplexing the demultiplexed broadcast signals;

a format converter which converts the broadcast signals having a time-division multiplexing format into a moving image format and outputs the format-converted signals;

a controller which transmits only the broadcast signals selected from the format-converted signals in accordance with a subscriber control signal to the setup boxes; and

15 a distributor which outputs the subscriber control signal to the controller and transmits the demultiplexed communication signals to the setup boxes.

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8. The system according to claim 7, wherein each of the optical network units further comprises:

a first O/E converter which converts and outputs the broadcast signals from among the demultiplexed optical signals provided from the wavelength-division multiplexer;

5 a second O/E converter which converts and outputs the communication signals from among the demultiplexed optical signals provided from the wavelength-division multiplexer;

a third O/E converter which converts and outputs the communication signals inputted through the optical fiber;

10 a first frequency converter which outputs the signals provided from the controller after converting the frequency thereof into a first intermediate frequency signal;

a second frequency converter which outputs the signals inputted from the distributor after converting the frequency thereof into a second intermediate frequency signal;

15 a signal combiner for combining the signals provided from the first and second frequency converters; and

a first E/O converter for converting the signals provided from the signal combiner through the optical fiber.

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9. The system according to claim 1, wherein each of the setup boxes comprises:

a signal separator for separating the signals received over the optical fiber into broadcast signals and communication signals; and

a hub for outputting the communication signals provided from one of a VOD player,
5 a computer and an HDTV to a corresponding subscriber terminal, the hub further configured to receive communication signals including a subscriber control signal for changing broadcast channels from the subscriber terminal.

10. The system according to claim 9, wherein each of the setup boxes further
10 comprises:

an O/E converter for converting the signals provided from the optical fiber;

a first and a second frequency converter for downconverting the broadcast signals and the communication signals from an intermediate frequency to a baseband frequency;
and

15 an E/O converter for E/O converting and transmitting the communication signals through the optical fiber.